



VideoForge 4K Video Pattern Generator User Manual

VideoForge 4K Video Pattern Generator

User Manual

Software Version 65

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Table of Contents

VideoForge 4K Features	4
Included Items	6
VideoForge 4K Front Panel	6
Front Panel USB Ports.....	6
Power Up, Power Down.....	7
VideoForge 4K Back Panel.....	7
Video Signal Output Connections.....	7
Generator Control Connection.....	8
VideoForge 4K to HDMI/DVI television, projector, or display.....	8
VideoForge 4K to Host Computer	8
VideoForge 4K Boot Sequence.....	9
VideoForge Manual Control.....	9
Generator Output	10
Video Format.....	10
Output Titling.....	12
Colorspace/Bit Depth	12
Color Encoding.....	12
Video Mute	12
Video Calibration.....	13
Test Patterns.....	14
Patterns Rendering Modules	14
Pattern Aliases.....	15
Custom Test Patterns.....	15
Administration.....	17
Network Settings.....	17
Updating Software.....	17
Resetting the VideoForge	18
Pattern Rendering Modules	18
Brightness.....	20
Checkerboard.....	21
Chromaticity.....	23
Color	24

TABLE OF CONTENTS

Colorbars.....	24
Contrast.....	25
Geometry.....	27
Gradient.....	27
ImageFile.....	29
Resolution.....	31
SectorStar.....	32
Sharpness.....	33
Sine.....	34
VerticalBar.....	35
Window.....	36
ZonePlate	37
XML-RPC Interface.....	39
Index.....	39

VideoForge Overview

Congratulations on your purchase of the SpectraCal VideoForge 4K Digital Video Generator. We have designed the VideoForge to be an affordable, feature-rich test pattern generator. The VideoForge outputs all current 4K formats via Quad-Link SDI, and also supports lower-resolution patterns via Dual-Link SDI, Single-Link SDI, HDMI, and DVI.

This highly flexible platform generates thousands of reference pattern variations with its 16 software pattern renderers, for testing, and calibrating video displays. The VideoForge produces any one of the billion possible colors inside a display's 3D color space, making the VideoForge better suited than any previous solution for display characterization generating a 3D Cube LUT. While many pattern generators are designed for use in a design and engineering role, we designed the VideoForge for field applications, but also included many features that have previously been available only in lab-grade generators.

VideoForge 4K Features

- SDI 4K, Quad HD, 2K, HD, and SD video formats, in YCbCr or RGB color space, at 8 or 10 bits/color.
- HDMI v1.4a 2K, HD, and SD video formats, in YCbCr or RGB color space, at 8 or 10 bits/color.
- Flexible generator output controls for video resolution, frame rate, color space, color bit depth, color encoding, and color gating.
- All standard performance test and calibration patterns, with thousands of pattern variations from sixteen versatile test pattern renderers, plus easy updates for future needs.
- Custom image and test pattern support for individual user needs.
- Supports 3D color cube LUT calibration, with full triplet output of any RGB color value.
- Convenient manual unit control, with browser-based control and no software installation.
- Fully integrated with SpectraCal CalMAN Display Calibration Software.
- 4K SDI Video Format (Quad Link 1.5 Gb/s SDI):
 - 4x2048x1080p 23.98/24/25 (4096x2160p)
- 4K SDI Video Format (Dual Link 3 Gb/s SDI):
 - 4x2048x1080p 23.98/24/25 (4096x2160p)
- Quad HD SDI Video Format (Quad Link 1.5 Gb/s SDI):
 - 4x1920x1080p 23.98/24/25 (3840x2160p)
- 2K SDI Video Format (Dual Link 3 Gb/s SDI):

- 2048x1080p 23.98/24/25 (digital cinema)
- HD SDI Video Format (Single Link 3 Gb/s SDI):
 - 1080p 50/59.94/60 (3Ga format & 3Gb format)
- HD SDI Video Format (Dual Link 1.5 Gb/s SDI):
 - 1080p 50/59.94/60
- HD SDI Video Formats (Single Link 1.5 Gb/s SDI):
 - 1080p 23.98/24/25/29.97/30
 - 1080i 50/59.94/60
 - 720p 50/59.94/60
- SD SDI Video Formats (Single Link 270 Mb/s SDI):
 - 625i 50 PAL (576i)
 - 525i 59.94 NTSC (480i)
- HDMI/DVI Video Formats: (4:4:4 RGB or 4:2:2 YCrCb, 8 or 10 bits/color)
 - 2048x1080p 23.98/24/25 (digital cinema)
 - 1080p 23.98/24/25/29.97/30/50/59.94/60
 - 1080i 50/59.94/60
 - 720p 50/59.94/60
 - 625i 50 PAL (576i)
 - 525i 59.94 NTSC (480i)
- Sixteen test pattern renderers provide standard performance test and calibration patterns, with thousands of pattern variations:
 - Brightness
 - Checkerboard
 - Chromaticity
 - Color
 - ColorBars
 - Contrast
 - Geometry
 - Gradient
 - ImageFile (custom .png and .jpg images loaded from USB drive)
 - Resolution
 - SectorStar
 - Sharpness
 - Sine
 - VerticalBar
 - Window
 - ZonePlate

Dimensions

Shipping: 12" x 12" x 5"

Unit: 9.5" x 8" x 3"

Included Items

- Power Supply; 12vdc 5a, all region 100-220vac
- USB Wi-Fi wireless adapter (to be supported in subsequent unit software)
- USB flash drive
- HDMI to mini HDMI audio/video output cable
- 4 BNC to 4 mini-connector (1.0/2.3) SDI video output cable assembly

VideoForge 4K Front Panel



Front Panel USB Ports

- Inside the left front access door are two USB ports. The left USB port contains the supplied USB Wi-Fi wireless adapter. The wireless adapter should be left in the left side USB port. The wireless adapter is not supported in the original release software, but will be supported as a control interface in subsequent software.
- The right USB port inside the front access door contains the supplied USB flash drive. The drive contains some example custom images and a pdf copy of this quick start guide.



Note: Wi-Fi interface control, RS-232 interface control, and front panel menu control will be supported in subsequent software.

Power Up

The power control button for the VideoForge is located in the upper right corner of the front panel. To power up the unit, momentarily press the Power button and release.

On power up, if the VideoForge is connected to a network, the front panel LCD shows; **Booting**, **Booting ..**, **Booting ...**, and then switches to show the unit's network host name and IP address. If the VideoForge is not connected to a network, or does not get an IP address from a DHCP server, the front panel LCD will continue to show "**Booting**"

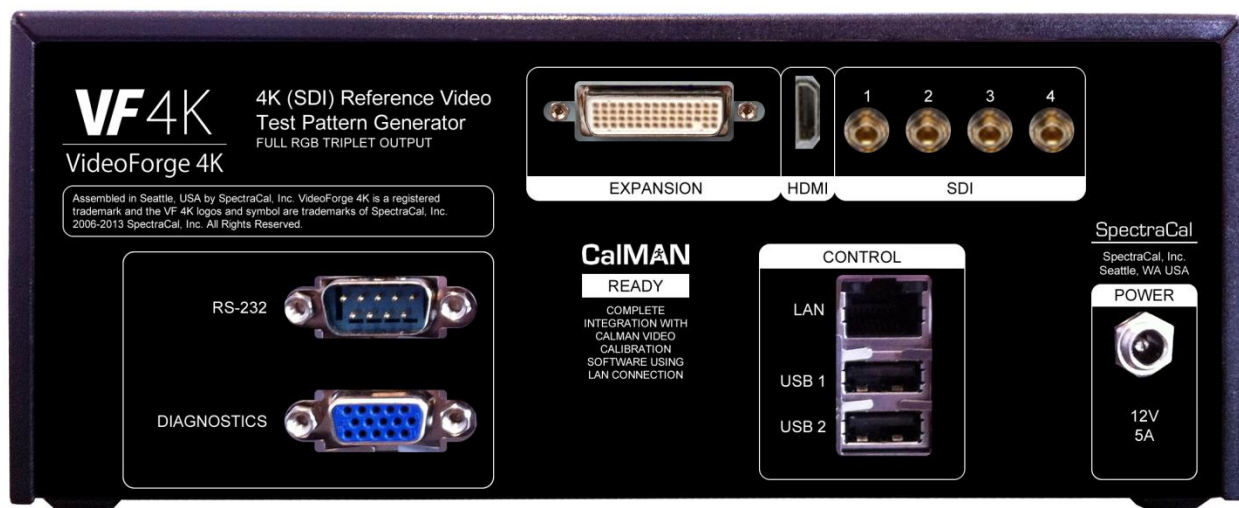
Once the connected VideoForge is connected to an active DHCP network, power cycle the unit to obtain an IP address.

On power up, the VideoForge defaults to a 720p60 YCC-10 Rec709 format, with the AV Foundry logo image, with outputs on SDI 3, SDI 4, and HDMI.

Power Down

To power down the unit, momentarily press the Power button and release. After approximately three seconds, the unit then powers down.

VideoForge 4K Back Panel



Video Signal Output Connections

Four SDI output mini-connectors are provided for SDI formats. For single-link SDI, a single, mirrored output is provided on both the SDI 3 and SDI 4 connectors. For dual-link SDI, the dual output is provided on the SDI 3 and SDI 4 connectors. For Quad HD or 4K SDI, all four of the mini-connectors are used as outputs, one for each of the 4K play out quadrants. A cable assembly with four mini-

connectors on one end and four BNCs on the other end is provided for connecting equipment to the SDI outputs.

One mini HDMI 1.4a connection is provided for SD, HD, and 2K video formats for either HDMI or DVI devices.

VideoForge to SDI monitor or projector

Connect the VideoForge to an SDI monitor or SDI projector using the supplied mini BNC to BNC cable assembly.

Note: When the VideoForge is producing a single link SDI format, it mirrors the output to both the SDI 3 and the SDI 4 output connectors. Connect either of the single link SDI outputs to the target display. If you connect both single link outputs to a display, the display may attempt to display the signal as a dual link SDI format, rather than as a single link SDI format.

VideoForge to HDMI/DVI monitor or projector

Connect the VideoForge to an HDMI monitor or HDMI projector using the supplied mini HDMI to HDMI cable.

Generator Control Connection

Connect the VideoForge to a host computer via connections to a common network. Connect the VideoForge LAN port to a network port, using an Ethernet cable (either straight-through or crossover).

Control Interfaces

The VideoForge features two control interfaces for controlling the generator output:

- **Manual User Control** – The VideoForge generator provides an IP-based control application for convenient manual control. The Manual User Control interface is documented in Chapter 2 of this manual, beginning on page 9.
- **Automated Computer Control** – The VideoForge generator provides an XML-RPC interface for program control. The XML-RPC interface is documented in Chapter 4 of this manual, on page 39.

CalMAN supports the VideoForge XML-RPC interface to totally control the generator within the CalMAN program. In CalMAN, when you select the AV Foundry VideoForge II generator on the Source Settings tab, you then supply the generator's IP address and click Connect.

Note: Wi-Fi interface control, RS-232 interface control, and front panel menu control will be supported in subsequent VideoForge software.

VideoForge Manual User Control

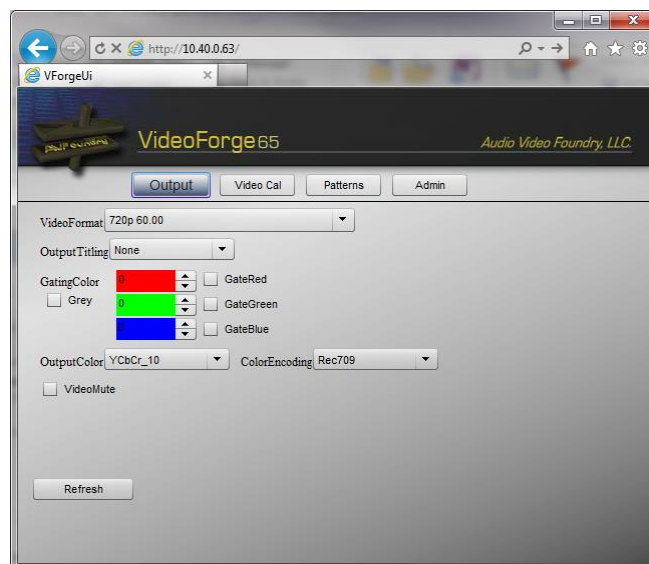
The VideoForge generator provides an IP-based control application for convenient manual control. This control interface is accessed by opening a web browser and navigating to the VideoForge IP address, shown on the generator LCD display. Adobe Flash Player, version 10 or later, must be installed to use the VideoForge manual control application.

Manual Control

To manually control the VideoForge:

1. Connect the VideoForge to a network router with an Ethernet cable, power on the VideoForge, and note the unit's IP address on the LCD.
2. Open a web browser (e.g. Internet Explorer, Safari, Firefox, etc.).
3. Enter the unit's IP address into the browser's address bar and press *Enter*.
4. Select the desired VideoForge user interface page and make desired selections.

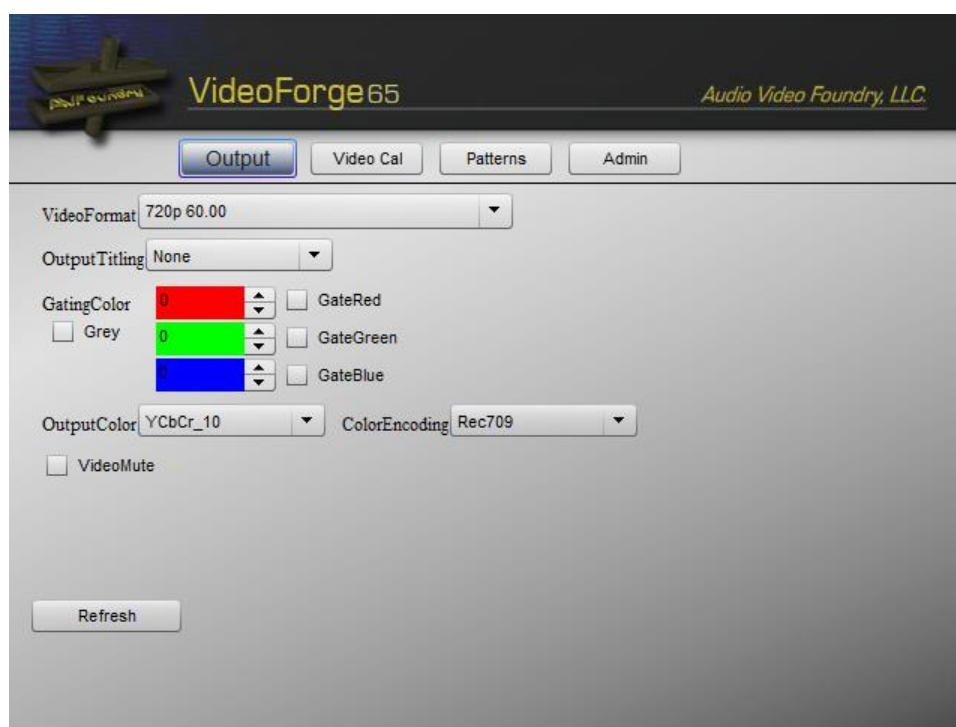
When the user control application initially opens, it displays the Output page.



Generator Output

The Output page gives the user full control over the VideoForge SDI and HDMI/DVI output signals. The available output option controls are:

1. Video Format
2. Output Titling
3. Color Gating
4. Color space/Bit Depth
5. Color Encoding
6. Video Mute



Video Format

The VideoForge 4K provides a number of common pre-defined SDI and HDMI/DVI video formats, as documented in the following table:

VideoForge 4K - Supported Formats										
Format	YCC-8	YCC-10	RGB-8	RGB-10	SL-SDI	DL-SDI	3Ga-SDI	3Gb-SDI	QL-SDI	HDMI/DVI
525 59.94 (480i)	X	X			X					X
625 50.00 (576i)	X	X			X					X
720p 50.00	X	X			X					X
720p 59.95	X	X			X					X
720p 60.00	X	X			X					X
1080i 50.00	X	X	X	X	X					X
1080i 59.95	X	X	X	X	X					X
1080i 60.00	X	X	X	X	X					X
1080p 23.98	X	X	X	X	X					X
1080p 24.00	X	X	X	X	X					X
1080p 25.00	X	X	X	X	X					X
1080p 29.97	X	X	X	X	X					X
1080p 30.00	X	X	X	X	X					X
1080p 50.00 DL	X	X	X	X		X				
1080p 59.95 DL	X	X	X	X		X				
1080p 60.00 DL	X	X	X	X		X				
1080p 50.00 3Ga	X	X	X	X			X			X
1080p 59.95 3Ga	X	X	X	X			X			X
1080p 60.00 3Ga	X	X	X	X			X			X
1080p 50.00 3Gb	X	X	X	X				X		
1080p 59.95 3Gb	X	X	X	X				X		
1080p 60.00 3Gb	X	X	X	X				X		
1080p2k 23.98	X	X	X	X		X				X
1080p2k 24.00	X	X	X	X		X				X
1080p2k 25.00	X	X	X	X		X				X
4x1920x1080p 23.98	X	X	X	X					X	
4x1920x1080p 24.00	X	X	X	X					X	
4x1920x1080p 25.00	X	X	X	X					X	
4x2048x1080p 23.98	X	X	X	X		X			X	
4x2048x1080p 24.00	X	X	X	X		X			X	
4x2048x1080p 25.00	X	X	X	X		X			X	

YCC-8 / YCC-10: YCrCb, 4:2:2, 8 or 10 bits/color

RGB-8 / RGB-10: RGB, 4:4:4, 8 or 10 bits/color

SL-SDI: Single link SDI (mirrored outputs on SDI 3 & SDI 4)

DL-SDI: Dual link SDI (output on SDI 3 / SDI 4)

3Ga-SDI: Single link 3 Gb/s SDI, 3Ga standard (mirrored outputs on SDI 3 & SDI 4)

3Gb-SDI: Single link 3 Gb/s SDI, 3 Gb standard (mirrored outputs on SDI 3 & SDI 4)

QL-SDI: Quad link 3 Gb/s SDI (SDI 1 = UL, SDI 2 = UR, SDI 3 = LL, SDI 4 = LR)

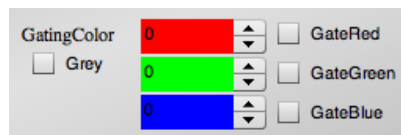
Output Titling

Output Titling allows the user to select which information (if any) is displayed on-screen with the pattern. The options are None, Name, and Version.

Title	Description
None (default)	No pattern titles are displayed.
Name	The pattern name and video format is displayed in the upper left hand screen corner.
Version	Pattern renderer version information is also displayed.

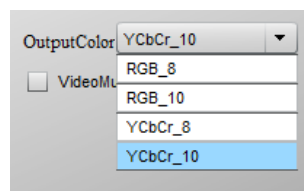
Color Gating

The color gating options allow the user to force the Red, Green, or Blue output components to specific values.



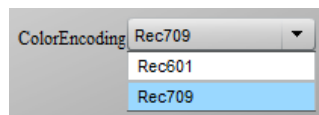
Color space/Bit Depth

The Color space option allows the user to select the color space and bit depth for output. The available selections are RGB 8-bit, RGB 10-bit, YCbCr 8-bit, and YCbCr 10-bit.



Color Encoding

The Color Encoding option allows the user to select the color space and bit depth for output. The available selections are Rec601 and Rec709.

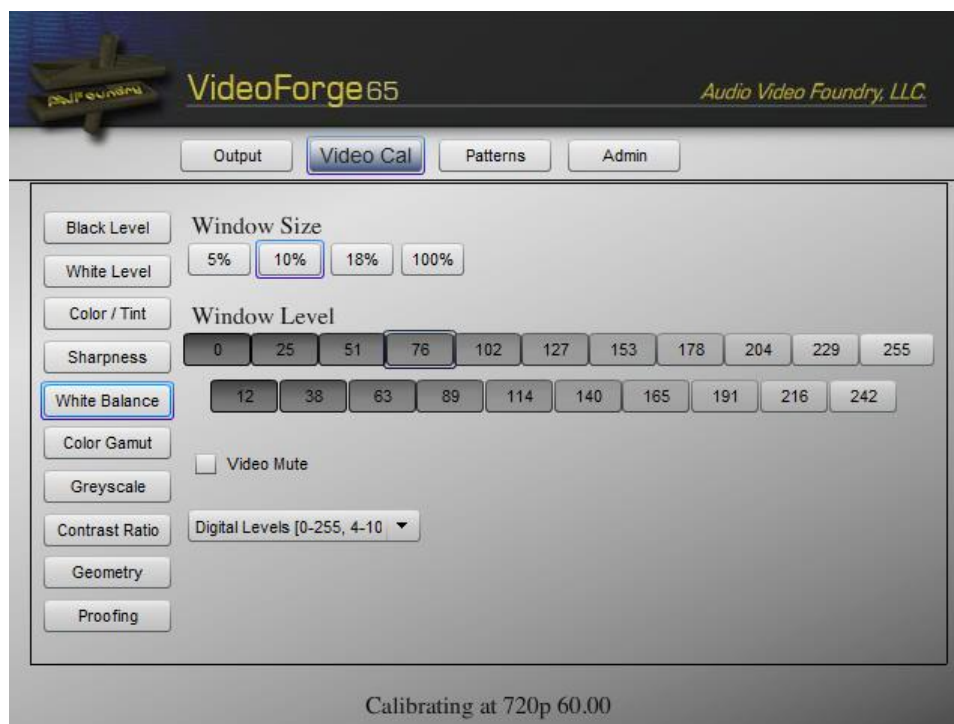


Video Mute

The VideoMute option “silences” the generator when checked, blanking the video output.

Video Calibration

The Video Cal page provides a shortcut to ten test patterns that are very useful for video calibration procedures. When a pattern is selected, by clicking a pattern button on the left side of the page, parameter option controls for the selected pattern are then available to the right of the pattern buttons.



Test Patterns

The Patterns page provides selection and full control of all pattern rendering modules and pattern aliases installed on the VideoForge. Select the desired pattern to display from the Pattern drop down list. Pattern rendering modules can be recognized by the parameter option controls that are provided below the Pattern drop down list. Use the parameter option controls to modify various characteristics of the output test pattern.



Pattern Rendering Modules

The VideoForge Patterns page provides access to 16 pattern rendering modules, listed below, which can be selected from the Pattern drop down list. When one of these 16 rendering modules is selected, the current test pattern configuration is sent to the VideoForge video outputs. Pattern parameter controls are provided for each pattern rendering module, below the Pattern drop down, to change the current test pattern configuration. Details for each pattern rendering module is provided in Chapter 3 of this manual, beginning on page 18.

- Brightness
- Checkerboard
- Chromaticity
- Color
- Colorbars
- Contrast
- Geometry
- Gradient
- ImageFile
- Resolution
- SectorStar
- Sharpness
- Sine
- VerticalBar
- Window
- ZonePlate

Pattern Aliases

In addition to the pattern rendering modules, the VideoForge also provides a number of pattern aliases in the Pattern drop down list. A pattern alias is a static test pattern with a pre-defined set of parameters. When a pattern alias is selected from the Pattern drop-down, there are no parameter option controls provided.

Custom Test Patterns (Image Files)

In addition to its built-in patterns, the VideoForge also renders custom test patterns or image files stored on a USB flash drive. The USB flash drive supplied with the VideoForge contains a number of sample 4K images.

Custom image files should be named as: {basename}-{vres}.{ext} (e.g. testpattern1-1080.jpg).

- {basename} can be anything
- {-vres} optional - specifies the vertical resolution of the file image (no leading zeros)
- {ext} is either "png" or "jpg."

When a USB flash drive is connected, the VideoForge searches the drive folders for any .png or .jpg files. These image files are then listed in the Pattern drop down as "{drive name}/{basename}." If there is just one version of the file with the selected basename, the file is just loaded. If there are multiple versions of the file with the selected basename, with different vertical resolutions indicated, VideoForge looks for a resolution equal to or smaller than the currently selected resolution. If there are no file resolutions equal to or smaller than the currently selected resolution, the smallest file resolution is selected.

If both "png" and "jpg" versions of a file are present, the VideoForge selects the "png" file.

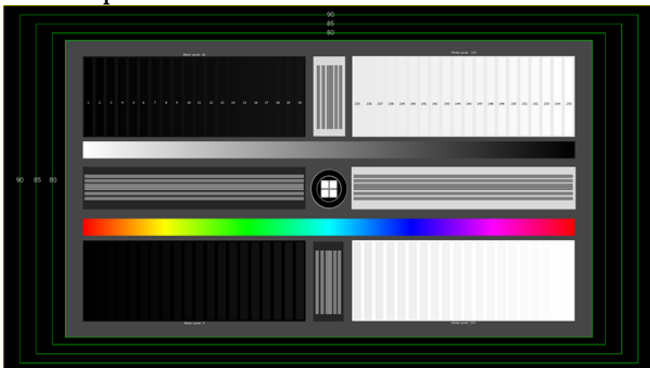
To display custom test patterns or images with the VideoForge:

1. Save custom test pattern or image files to a USB flash drive, in PNG or JPEG format, at the desired display resolution (e.g. 1920x1080).
2. Connect the flash drive to a VideoForge USB port.
3. Access the VideoForge control interface, as outlined in the "Manual User Control" section of this manual, on page 9.
4. On the Patterns tab in the VideoForge control interface, open the Pattern drop down box. Any custom files available on an attached USB drive will be listed, grouped by USB drive.
5. Select one of the custom file names to display the custom image.

Sample 4K Images

(All images provided at both 3840x2160 and 4096x2160 resolution on supplied USB flash drive.)

Resolution pattern:



- Brightness/Contrast Sweeps with both Video and PC Background Levels
- Sharpness/resolution lines 1 pixel, 2 pixel and 4 pixel widths (Vertical and Horizontal, light on dark and inverted)
- Grayscale smooth sweep and Gamut Smooth sweeps
- Overscan 0 Yellow 95%, 90% and 85% marked in green
- Marked Center Point

Visual Assessment images:

- Gum Wall (detail and color assessment)
- Ice (white detail assessment)
- Lights (full saturation color assessment)
- Locks (detail assessment)
- Peafowl (full saturation colors and detail assessment)
- Seafood (color and detail assessment)
- Skyline (dark levels assessment)
- Sporting (detail and full saturation colors)

Administration

The Admin page provides version and serial number information for the VideoForge generator. It also allows a user to configure the network settings, update the VideoForge software, and reset the generator.

Generator Settings

The VideoForge output signal levels can be changed to one of three different selections:

- Digital Levels [0-255, 4-1019]
- SMPTE Legal Levels [0%-109%]
- Full Range Levels [0%-100%]

Network Settings

The VideoForge network settings are displayed as read only fields on the Admin Page. The following network settings are displayed:

1. Hostname – The network node name of the VideoForge generator.
2. Subnet – The network address used by the VideoForge and the host computer for communication.
3. VideoForge Address – The VideoForge IP address.

Network Operation

When the VideoForge is powered up or connected to a host DHCP computer, it makes a request on this network interface for an IP address. The assigned IP address is shown on the VideoForge Admin page and on the VideoForge front panel LCD display.

Updating VideoForge Software

Updating the software modules on the VideoForge is accomplished through the Firmware Update button on the Admin page. The updates are all done in a three step process: 1) Select the software update file, 2) Upload the file, and 3) Install the file. As each step is completed, the button's function changes to the next step. You can cancel the operation at any point by navigating away from the Admin page.

Resetting the VideoForge

The VideoForge 4K can be reset at three different levels:

- Software Reset
- Soft Reboot
- Hard Reboot

The Software Reset closes and re-starts the VideoForge internal software without re-booting the entire system. The software reset should be the first order of troubleshooting, as it can fix problems more quickly than either a soft reboot or a hard reboot.

- Click the Software Reset button on the Admin Page to perform a Software Reset.
- Click the Reboot button in the Admin Page to perform a Soft Reboot on the unit. This may be advised if Software Reset is ineffective at solving a problem, or for certain types of software updates.
- To Hard Reboot the VideoForge, cycle the power to fully reset the unit. Pressing the Power button for an extended period forces the VideoForge to power down and reset.

Pattern Rendering Modules

The VideoForge 4K is unique among video pattern generators, in that it has been designed with extremely versatile pattern rendering modules. Each pattern renderer provides a selection of pattern parameters that allows a user to customize the test pattern produced by the rendering module. This chapter details each pattern rendering module and its parameter options.

Brightness

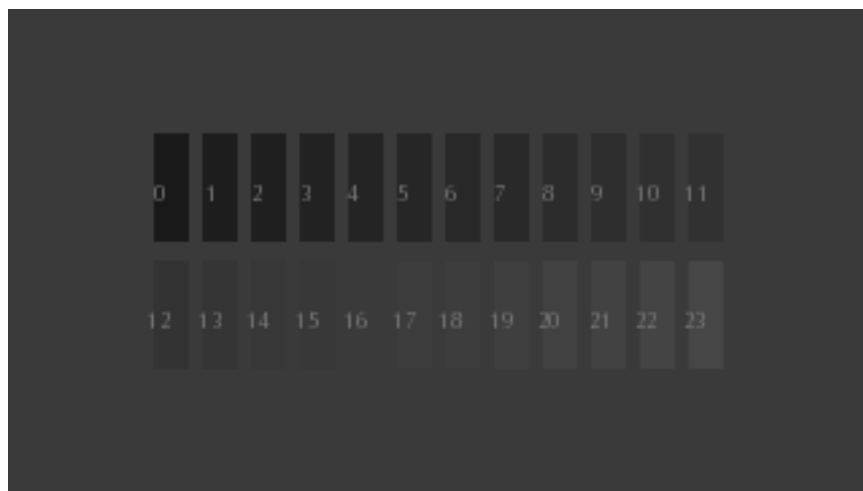
The Brightness pattern is used to evaluate and calibrate the brightness or black level control on a video display.

There is a single parameter option for this pattern:

Parameter	Description
bgLevel	Selects the pattern's background color and level.



Brightness pattern parameter options



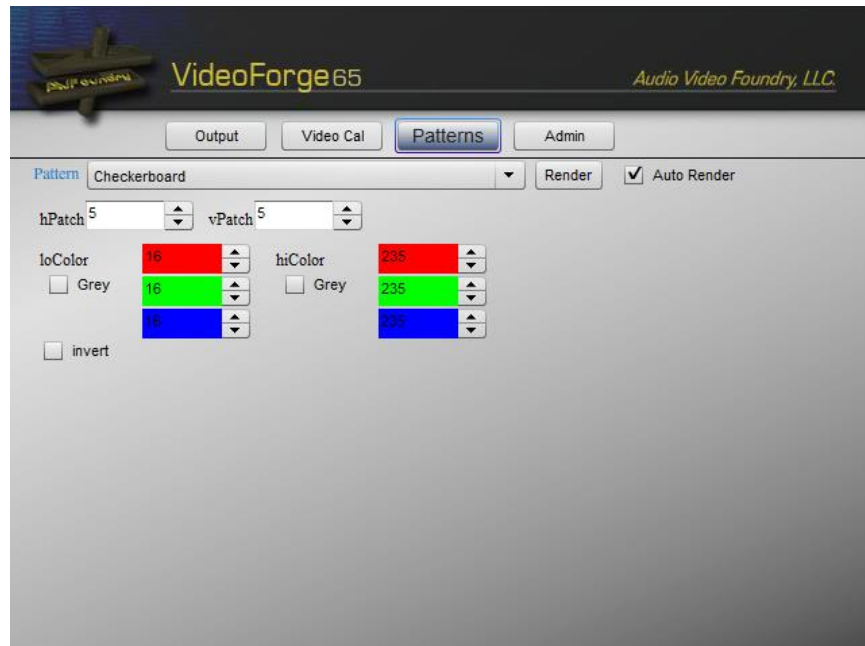
Brightness test pattern

Checkerboard

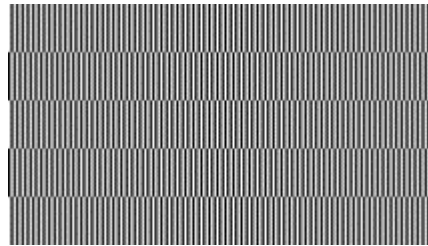
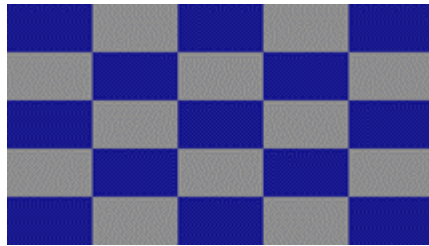
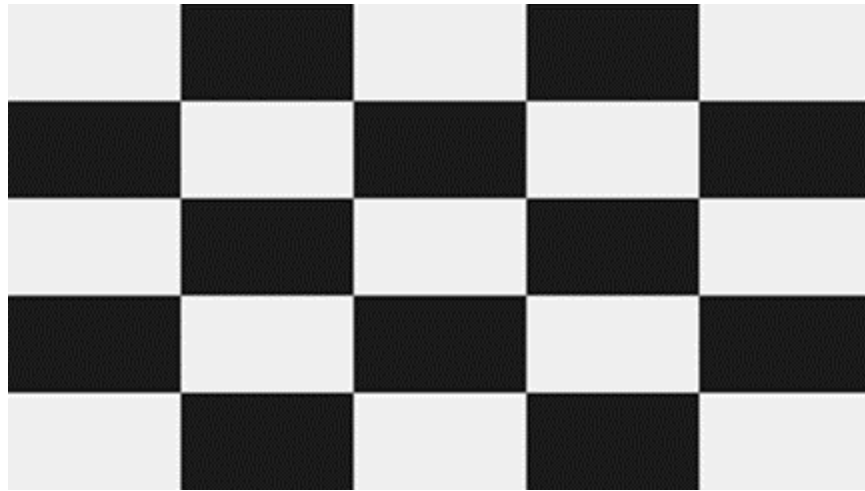
The Checkerboard pattern displays a grid of two alternating colors. This pattern can be used to for a variety of performance tests and calibrations. The traditional use of the checkerboard pattern is for contrast ration measurements. The VideoForge Checkerboard pattern can be used to calibrate a display's Color control setting by setting loColor to blue (0, 0, 191), and hiColor to white (191, 191, 191). The checkerboard can also be used to calibrate a display's Tint/Hue control by setting loColor to cyan (0, 191, 191) and hiColor to magenta (191, 0, 191).

The pattern parameter options are:

Parameter	Description
hPatch	The number of horizontal color patch transitions.
vPatch	The number of vertical color patch transitions
Invert	When set, the two colors are exchanged. This can be used, for example, to take contrast ratio measurements without re-positioning a color sensor.
loColor	One of the two alternating colors to display.
hiColor	The second of the two alternating colors.



Checkerboard pattern parameter options



Checkerboard test pattern examples

Chromaticity

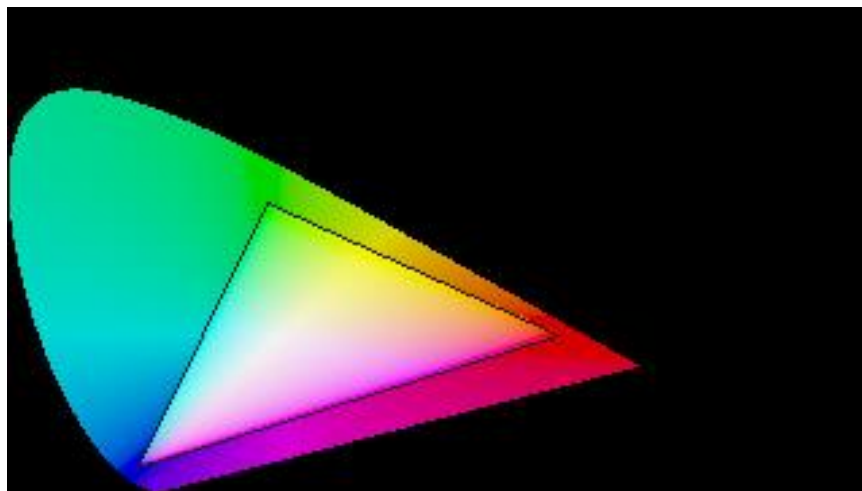
The Chromaticity pattern displays a CIE 1931 chromaticity chart.

The pattern parameter options are:

Parameter	Description
Style	Selects whether the colors are Shaded, across the entire chart; Constrained to only the gamut triangle; or Full Range, with no reference gamut triangle.
RgbSpace	Selects the size and shape of the reference gamut triangle, defining the color space. The choices are: Rec709 (high definition), Rec601 (standard definition).
Gamma	Selects the target gamma.



Chromaticity pattern parameter options



Chromaticity test pattern

Color

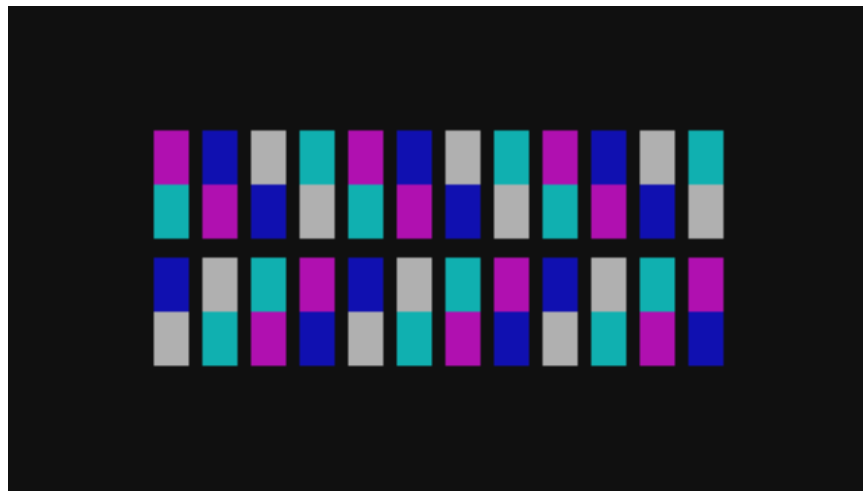
The Color pattern displays a set of color bars.

There is a single parameter option for this pattern:

Parameter	Description
Brightness	Selects the color luminance levels.



Color pattern parameter options



Color test pattern

Colorbars

The Colorbars pattern displays a set of SMPTE color bars.

There is a single parameter option for this pattern:

Parameter	Description
Brightness	Selects the color luminance levels.



Colorbars pattern parameter options



Colorbars test pattern

Contrast

The Contrast pattern displays bright bars of grey, from 232 to 255, on a selectable background.

There is a single parameter option for this pattern:

Parameter	Description
bgLevel	Selects the pattern's background color and level. If the Grey option box is unchecked, any color may be selected, by specifying the desired color's Red, Green, and Blue levels.



Contrast pattern parameter options



Contrast test pattern

Geometry

The Geometry pattern consists of straight lines and circles that allow the user to evaluate any geometric distortions induced by the display system.

The pattern parameter options are:

Parameter	Description
hLines	Selects the number of horizontal lines displayed in the pattern.
vLines	Selects the number of vertical lines displayed in the pattern.



Geometry pattern parameter options

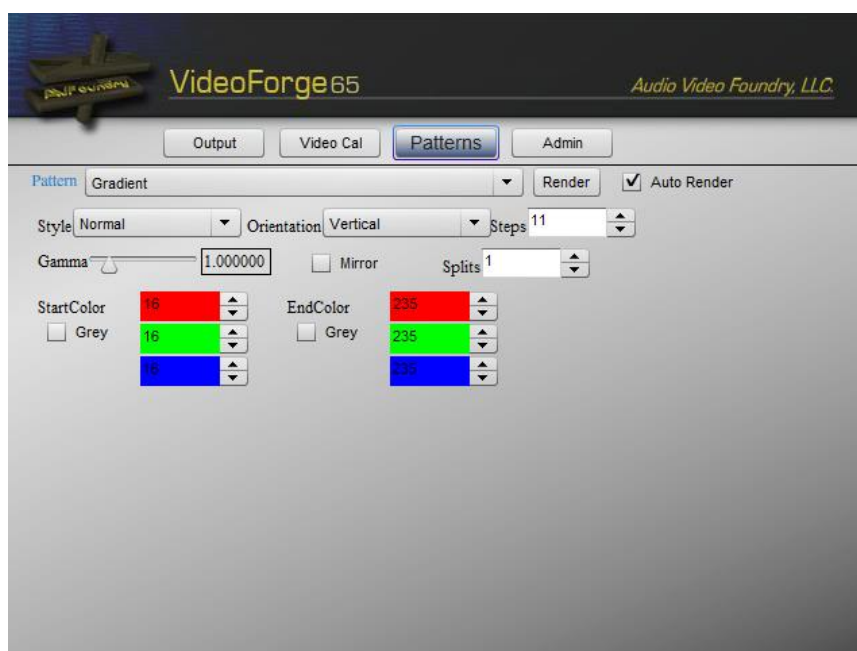
Geometry test pattern

Gradient

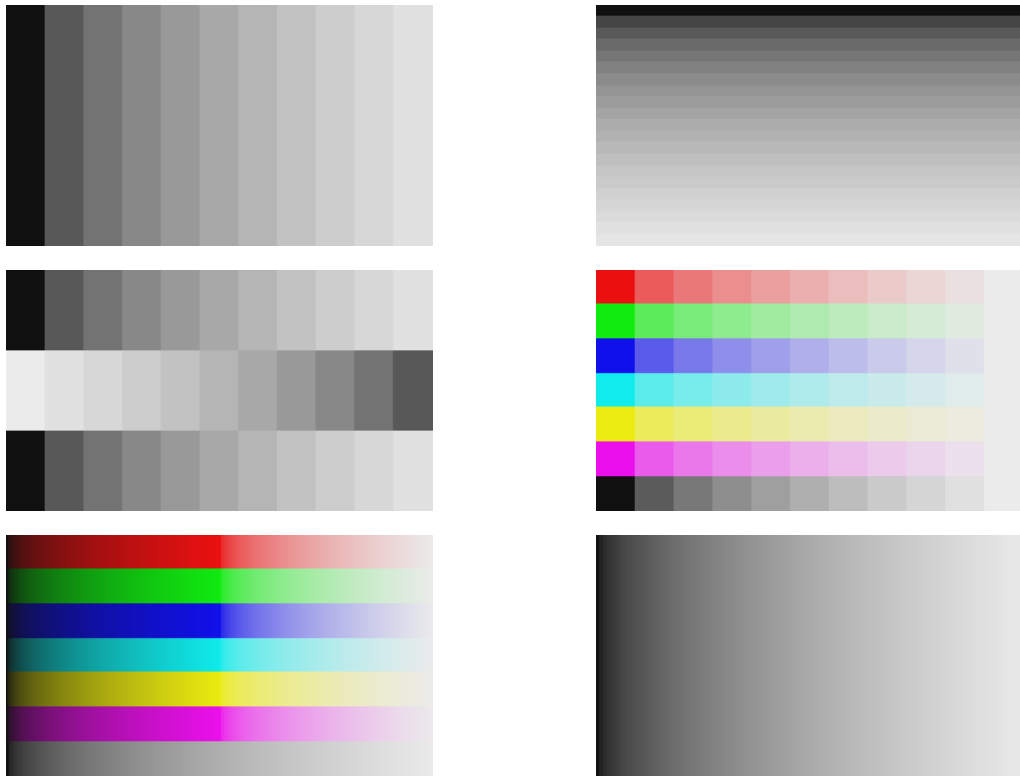
The Gradient pattern presents either a number of stepped bars or a smooth gradient.

The pattern parameter options are:

Parameter	Description
Style	Selects Normal bars, RGBCMYK bars (RGBCMY luminance and saturation steps), RGBCMYK_lo bars (RGBCMY luminance steps), or RGBCMYK_hi bars (RGBCMY saturation steps).
Orientation	Selects either Vertical or Horizontal bars.
Steps	Selects the number of shading steps. Selecting 0 produces a smooth gradient.
Gamma	Selects the gamma to be overlaid on the bar or gradient range.
Mirror	Reverses the bar order on one half of the screen, when checked.
Splits	Selects the number of times the bars are split, with the level range reversed. Selecting 0 produces full height or full width bars.
StartColor	Selects the background color and level for the first bar. If the Grey option box is unchecked, any color may be selected, by specifying the desired color's Red, Green, and Blue levels.
EndColor	Selects the background color and level for the last bar. If the Grey option box is unchecked, any color may be selected, by specifying the desired color's Red, Green, and Blue levels.



Gradient pattern parameter options



Gradient test pattern examples

ImageFile

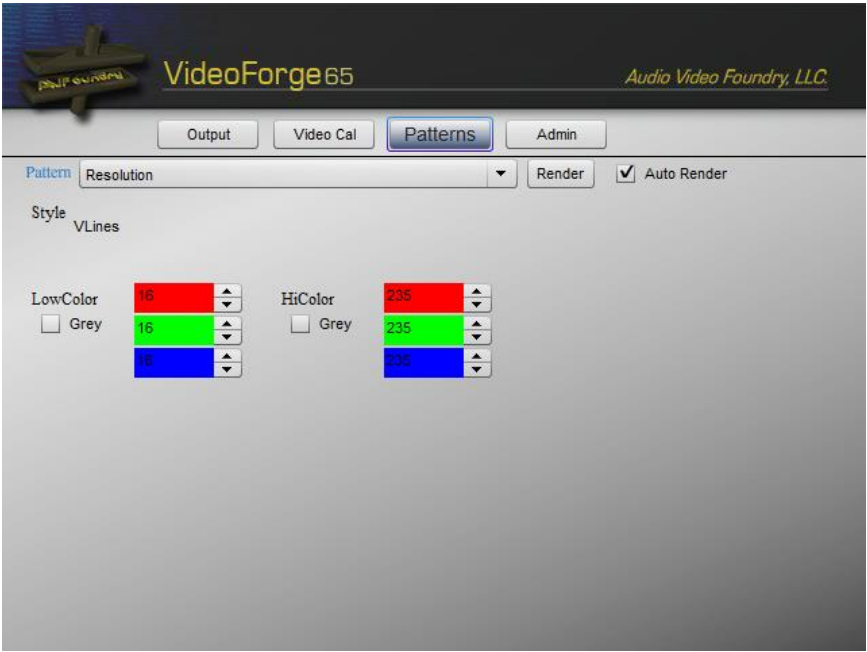
The ImageFile pattern renderer page provides background administrative support for custom image files that can be loaded from a connected USB flash drive. This page is not required for use by an end user of the VideoForge generator.

Resolution

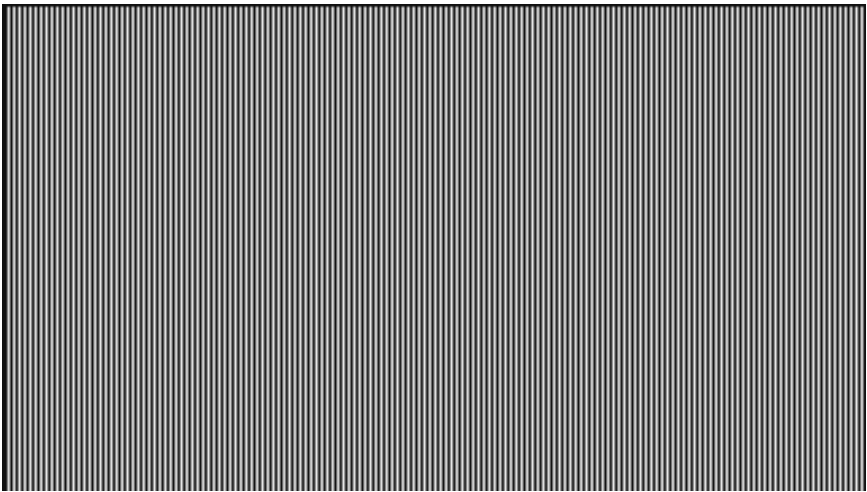
The Resolution pattern is used to check a display’s pixel resolution.

The pattern parameter options are:

Parameter	Description
LowColor	Selects the background color and level for the low level bars. If the Grey option box is unchecked, any color may be selected, by specifying the desired color’s Red, Green, and Blue levels.
HiColor	Selects the background color and level for the high level bars. If the Grey option box is unchecked, any color may be selected, by specifying the desired color’s Red, Green, and Blue levels.



Resolution pattern parameter options

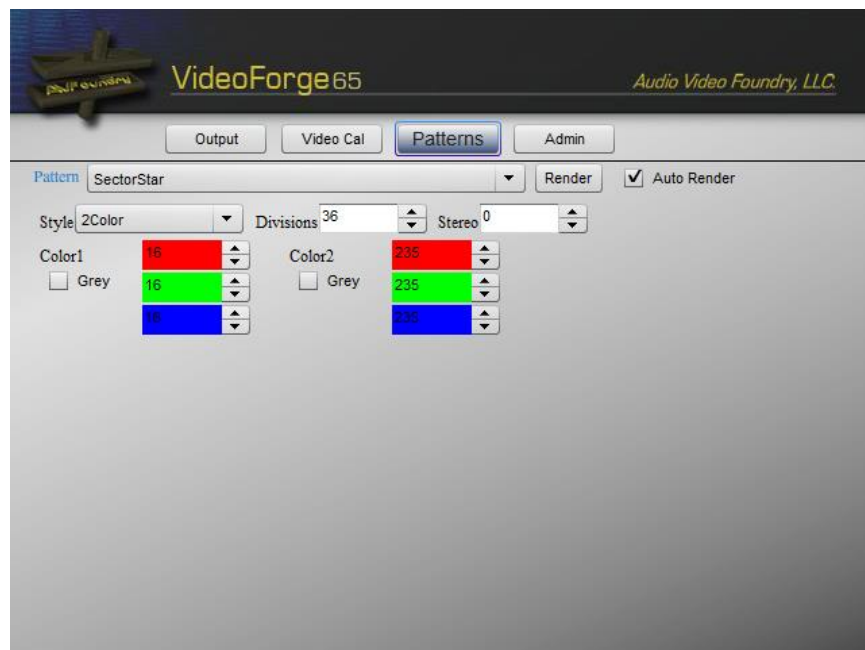


Resolution Test Pattern

SectorStar

The pattern parameter options are:

Parameter	Description
Style	Selects 2Color, RGBCMYK bars, or Sine.
Divisions	Selects the total number of star segments
Color1	Selects the color and level for the odd alternating star segments. If the Grey option box is unchecked, any color may be selected, by specifying the desired color's Red, Green, and Blue levels.
Color2	Selects the color and level for the even alternating star segments. If the Grey option box is unchecked, any color may be selected, by specifying the desired color's Red, Green, and Blue levels.



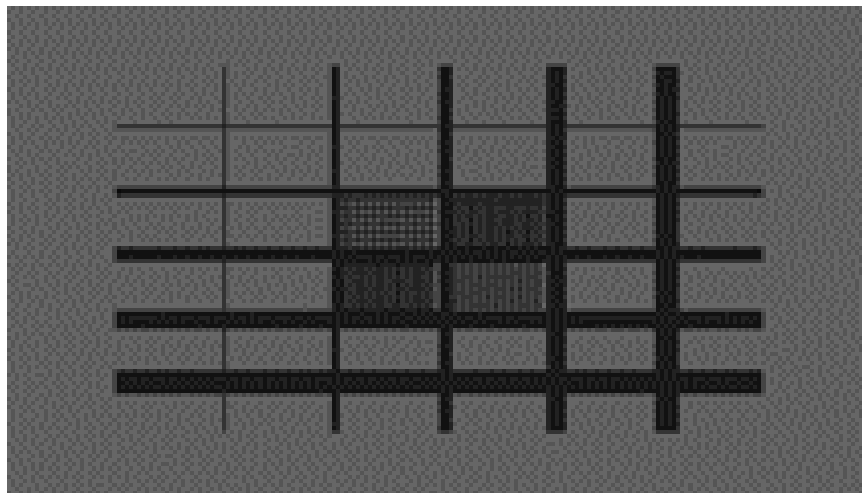
SectorStar pattern parameter page

Sharpness

The Sharpness pattern is used to check for artifacts introduced by edge enhancement functions in the display.



Sharpness pattern parameter page



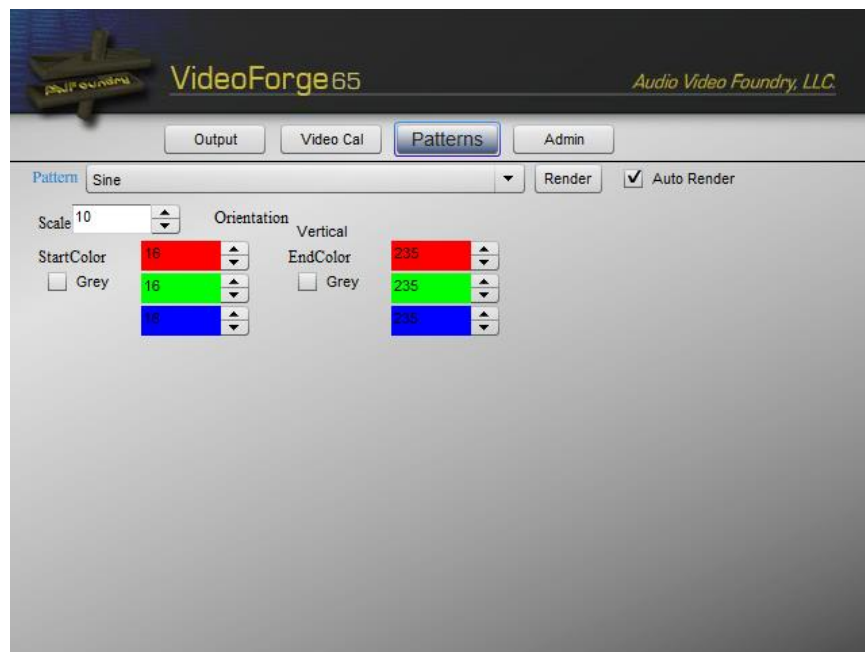
Resolution Test Pattern

Sine

The Sine pattern is a multiburst pattern variant that provides alternating bars of decreasing width, corresponding to a range of video signal frequencies. This pattern, however, provides a sinusoidal transition between the alternating bars, rather than abrupt square edge transitions. This results in a corresponding range of video signal frequencies that more closely relates to those in video transmission systems for each selected signal resolution.

The pattern parameter options are:

Parameter	Description
Scale	Increases or decreases the range of multiburst bar widths. The default value of 10 sets the minimum bar spacing equal to the standard line width of the selected signal resolution.
StartColor	Selects the color and level for the odd alternating bars. If the Grey option box is unchecked, any color may be selected, by specifying the desired color's Red, Green, and Blue levels.
EndColor	Selects the color and level for the even alternating bars. If the Grey option box is unchecked, any color may be selected, by specifying the desired color's Red, Green, and Blue levels.



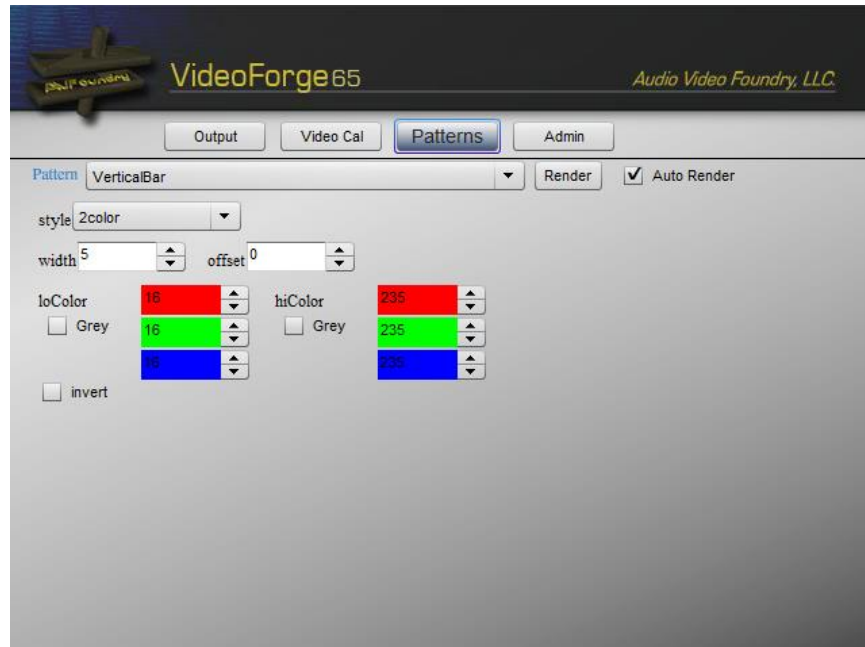
Sine pattern parameter page

VerticalBar

The VerticalBar pattern provides either two color or multicolor alternating vertical bars.

The pattern parameter options are:

Parameter	Description
style	Either "2color" or "wrgbcmk" multicolor can be selected.
width	Sets the number of pixels in a pair of bars. Larger numbers result in wider bars.
offset	Offsets the pattern to the right by the selected number of pixels.
loColor	Selects the color and level for the odd alternating bars in "2color" mode. If the Grey option box is unchecked, any color may be selected, by specifying the desired color's Red, Green, and Blue levels.
hiColor	Selects the color and level for the even alternating bars in "2color" mode. If the Grey option box is unchecked, any color may be selected, by specifying the desired color's Red, Green, and Blue levels.



VerticalBar pattern parameter page

Window

The Window pattern displays a window of a specified size and color, on a specified background color, at a specified location on the screen.

The pattern parameter options are:

Parameter	Description
Style	Either Constant Size or Constant APL can be selected. For explanation, see the Size and APL parameters below.
loPluge	When selected, displays a set of loPluge bars to the left of the Constant Size window.
hiPluge	When selected, displays a set of hiPluge bars to the right of the Constant Size window.
Size	The window size is specified as a percentage of the total screen area.
APL	When Constant APL style is selected, the APL selection box sets the target APL (average picture level). With Constant APL, the background level is adjusted to make the overall screen level average out to the selected APL. This can be an advantage when calibrating a display that changes its performance characteristics with changes of picture APL.
xOffset	Changes the horizontal position of the window, with the default 50 value at the middle of the screen.
yOffset	Changes the vertical position of the window, with the default 50 value at the middle of the screen.
gridLines	When selected, vertical and horizontal grid lines are superimposed on the pattern.
hDiv	Selects the number of horizontal grid line divisions.
vDiv	Selects the number of vertical grid line divisions.
Color	Selects the color and level for the pattern Window. If the Grey option box is unchecked, any color may be selected, by specifying the desired color's Red, Green, and Blue levels.
BgColor	Selects the color and level for the pattern background. If the Grey option box is unchecked, any color may be selected, by specifying the desired color's Red, Green, and Blue levels.



Window pattern parameter page

PATTERN RENDERING MODULES



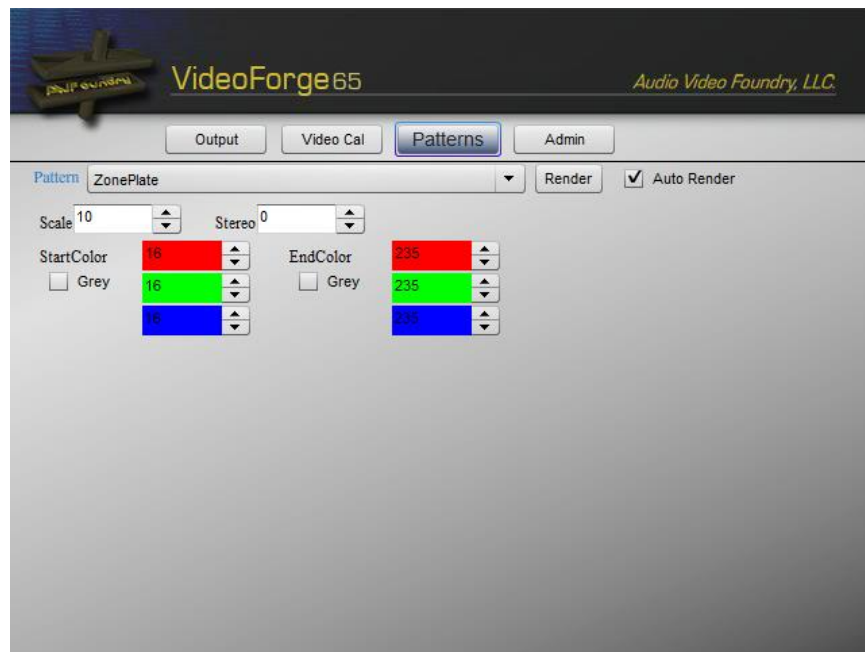
Window Test Pattern examples

ZonePlate

The Zone Plate pattern creates a series of alternating concentric circles with sine level transitions. The zone plate can test several display performance characteristics, including luminance resolution and focus.

The pattern parameter options are:

Parameter	Description
Scale	Controls the resolution pitch of the pattern. Increasing the scale increases the resolution of the pattern by decreasing the spacing of alternating segments.
StartColor	Selects the color and level for the odd alternating segments. If the Grey option box is unchecked, any color may be selected, by specifying the desired color's Red, Green, and Blue levels.
EndColor	Selects the color and level for the even alternating segments. If the Grey option box is unchecked, any color may be selected, by specifying the desired color's Red, Green, and Blue levels.



Zone pattern parameter page

XML-RPC Interface

The VideoForge can be controlled from software through an XML-RPC interface. The commands supported by the XML-RPC are listed below.

GetGenOptions

Returns a list of the generator options and their current values.

GetVersion

Returns version information about the VideoForge.

MMCAlias

Internal command used for adding files to the pattern list.

PatternOption

Used to retrieve a list of patterns, or options for a specific pattern.

ReadEdid

Reads the EDID table from an attached display and returns the data.

SetAlias

Defines an alias for the VideoForge interface.

SetGen

Used to set any and all parameters on the VideoForge and patterns.

system.listMethods

Returns a list of supported methods.

Index

Admin Page, 17
 Adobe Flash, 9
 Aliases, 15
 Brightness Pattern, 20
 Checkerboard Pattern, 21
 Chromaticity Pattern, 21
 Color Gating, 12
 Color Pattern, 23
 Colorbars Pattern, 25
 Contrast Pattern, 26
 Custom Patterns, 15
 Files, 15
 Flash, 9
 Formats, 11
 Generator Output, 10
 Geometry Pattern, 27
 Gradient Pattern, 28
 ImageFile Patterns, 30
 IP address, 7
 USB flash drive, 6
 Mute, 12
 Network Settings, 17
 Orientation, 28, 34
 Output, 10
 Output Orientation, 28, 34
 Output Titling, 12
 Patterns, 14
 Reset, 18
 Resolution Pattern, 16, 31
 SectorStar Pattern, 32
 Sharpness Pattern, 33
 Sine Pattern, 34
 SMPTE Bars, 25
 Software, 18
 Test Patterns, 14
 Titling, 12
 Updating Software, 18
 User Patterns, 15
 Vertical Bar Pattern, 35
 Video Formats, 11
 VideoMute, 12
 Window Pattern, 36
 Zone Plate Pattern, 37